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Viewpoint

‘Environmental Impact Assessment’ in Drylands: Late Knowledge Penetration or a Deliberate Ignorance for Megaprojects?

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Abstract: Despite the paramount role of drylands in supporting people’s livelihoods and rendering ecosystem services, legislation on Environmental Impact Assessment has been introduced belatedly after several decades. By exemplifying Iran, the author proposes two main reasons for such a delayed action. First, drylands are misleadingly considered as barren lands where biodiversity is relatively low. In one classification, deserts are even categorized along with rocks. Second, the author emphasizes that drylands have been subjected to unprecedented changes due to the expansion of infrastructure and urbanization that started in the 1970s. These growing pressures have been beyond the ecological resilience of drylands and have not been monitored, assessed, and modified correctly. Further scrutiny regarding EIA undertakings in drylands and the way they can be improved is now needed.

Keywords: environmental impact assessment; drylands; legislation



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Environmental Impact Assessments (EIAs) are “at the frontline of balancing economic, societal and environmental needs” [1] p. 328. EIAs and Social impact assessment (SIA) have been practised for half a century [2]. Countless cases of EIAs have been documented so far, though shortcomings and failures are apparent across all continents [3].

After over 20 years of professional experiences on environmental aspects of drylands (Iran, Australia, China), the author noticed an unusual timeframe gap between the initiation of large-scale projects and the legislation and undertakings of the EIA. This is especially the case in Iran where the timeframe included decadal gaps between the commencement of large-scale projects and the ratification of EIA. For the undertaking of EIAs, timing is crucial, and ecological data should be gathered and used at the very start of a project [1]. Moreover, drylands are regarded as pivotal ecosystems at the global level especially for their unique ecosystem services [4]. Thus, the question of this research is why do such large timing gaps exist between the initiation of megaprojects and EIA legislation and enactment in Iran?

By searching the existing literature, the author’s findings were also observed to be applicable to other dryland countries in the Middle East region. In these dryland areas of the Middle East, EIA at the national level had not been introduced until 1990s [5], and even later for their cities (e.g., Abu Dhabi in 2003: [6]). Compared to the growing South Asian countries (Thailand, Malaysia, Indonesia, and the Philippines) which initiated the EIA process before 1990 [7] and China in 1973 [8], there has been a noticeable gap between the EIA, if any, and the implementation of megaprojects in the Middle East.

Sadly, though, the environment of these dryland countries has experienced extraordinary, sustained, and irreversible damage. Some uncountable reports and papers have revealed this unsustainable exploitation of nature, while equally, many critical global reports have illuminated the importance of ecosystem services in drylands. From the drying-up of wetlands to deforestation to wildlife extinction, new human-dominated landscapes have been formed in these dryland countries.

In this article, preliminary debates surrounding the EIA on Iran will demonstrate the central research argument. Then, this hypothesis will be fortified by global misconceptions about drylands.

1. EIA in Iran: A Brief Review

There is clear evidence that adaptation to harsh climate and low water resources has been part of the mindsets of people living in Iranian dryland territory over millennia. In the central dryland areas of the country, a special tower built in houses, known as *Badgir* (windcatcher) [9], allows natural air flowing inside the house to keep it cool during hot summers with no requirement for an extra cooling system. The first historical evidence of windcatcher has been found in Iran dated back to 4000 BC [9]. The earliest documented resiliency (adaptation) technique to cope with water scarcity in drylands is known as ‘Qanat’, a system consisting of interconnected long underground water canals. This system still exists (notably in Iran) and can hold precious water for longer durations for agricultural purposes.

The nature-loving affiliation of Iranians has also been reflected in their cultural, literary, and religious documents [10]. Religious admiration and keeping the water clean and safe has been recorded by ancient Iranians for whom polluting water was a great sin [11].

Iran has developed comprehensive natural resources management in its legislations much earlier than its neighbouring countries. The first documented attempts to conserve Iran’s pristine Hyrcanian (northern) forests, dating back to as early as 1916 when the Government decided to survey and map these Northern forests [12]. It was followed by a series of other important national legislation on environmental conservation, including legal hunting regulations in 1956 [11]. Wide-ranging efforts to nationalise forests and water resources and establish specialised organisations (Forest and Rangeland Organisation and Department of Environment) have enticed the necessity of environmental conservation and augmented national planning and activities, notably since the mid-twentieth century.

Nevertheless, with the growing population, and subsequent agricultural (with over-usage of water resources) and developmental activities, the environment has become neglected or even burdensome for developmental projects in Iran. Land degradation, deforestation and desertification have become more noticeable. Those elements of natural desert landscapes, dunes, have encroached on the roads, buildings, schools and hospitals [13]. Dunes have been seen as useless and “the lifeless” (as referred to by a pioneer environmental researcher who established the Department of Environment in the 1970s: [14].

For EIA, there is a noticeable time gap in Iran. It took decades for EIA to be ratified and incorporated in its national plan since the commencement of unprecedented megaprojects, i.e., from the construction of large-scale dams in the 1950s to the ratification of EIA in the 1990s [15]. Like in other dryland countries in the Middle East, EIA became a new requirement for large-scale projects and was mandated belatedly by the second National Development plan in 1994 [15], even though Iran is regarded as a global niche and biodiversity hotspot, hosting various important flora and fauna species [14].

To evaluate such EIA gaps, the case of Iran will be looked at in the broader context of drylands as a whole.

2. Drylands: Misconceptions of ‘Barren Lands’

Drylands encompass arid, semi-arid, and dry subhumid zones (excluding polar and subpolar regions) [16]. Drylands are now home to about one third of the human population and experienced the highest population growth rate in the 1990s [4]. Nevertheless, the (mis)perception of the definition of drylands as ‘barren lands’ and ‘lifeless expanses’ [16] among the public has penetrated environmental assessors’ and practitioners’ beliefs. Many recent global research databases classify barren lands as those comprised of ‘sand, rock, saline-alkali land, or alpine desert’ (e.g., CNLUCC 2015 cited by [17]). Such categorisation and conception evaporate any imagination of flora and fauna existing in sand dunes, alpine areas, and typical landscapes in drylands—a concept which is incorrect scientifically [16].

In particular, less attention has been given to the lost connectivity between ecosystem functions and wildlife survival in dryland areas. This issue of wildlife is especially very relevant to drylands because there has been a long-run conflict between anthropogenic factors (e.g., pastoralism, mining) and wildlife, while climatic condition (e.g., drought, fire) has been precarious. The most prominent failed wildlife conservation case is attributed to Australia [18], a largely dryland country which has experienced over two centuries of destructive pastoralism and mining activities at large-scale.

3. Drylands: Hot Spots for Megaprojects

It is a truism that, in addition to humid and semi-humid regions, most colossal developmental and construction projects have been implemented in drylands. The most noticeable megaprojects, including transformation for mining or agricultural production, have been recorded in drylands across China, Australia, UAE, USA, etc.

Here, the author considers ‘megaprojects’ from socio-ecological viewpoints as those infrastructure confined in one region that citizens may benefit from or suffer (definite social and ecological footprints); e.g., dams, airports, ports. The author argues that ‘global citizens’ have benefited from such projects much more than ‘local communities’, including indigenous (or First Nations) peoples in many cases. In assessing water megaprojects in drylands, Sternberg [19] noted two distinctive groups: “winners—residents and regions who gain access to water, receive economic advantage and improve quality of life—and losers—who benefit little if at all from megaprojects, pay more for an essential good, and lose land and livelihoods to project footprints” [19] p. 316.

Despite a profitable economic return, such megaprojects are plagued with uncertainties, difficulties, inefficiencies and failures [20,21]. As one of the typical megaprojects in drylands, for instance, water megaprojects are stated to be inclined toward influencing development, political goals or state power rather than solving water deficiencies [19].

The dryland Middle East region, which was regarded once as a civilisation hub of earlier human settlements, has been turned into an international tourism and travel hub heavily funded by oil and gas revenues, especially over the past four decades. In oil-rich Middle Eastern countries, EIA was introduced in their national environmental plans several decades after the initiation of megaprojects. While many of these countries have started their megaprojects since the 1970s, most of them have developed and imposed the relevant EIA laws and regulations later; e.g., UAE in 1999 [5]. Current EIAs of these countries suffer from weaknesses, including lack of specific guidelines for sectoral and technical guidelines, lack of legal provision, lack of monitoring, absence of EIA review approach and lack of transparency [5]. Hastily prepared developmental plans and actions as well as rapid urbanization have ruined the pristine natural landscapes in these countries while EIA was absent for much of the past. A similar situation happened for China during the intensification period (1991–1995) in which the growing economy hampered the implementation of impact assessment [8].

It is also safe to say, like many other professional service-renderings in the Middle East countries, that EIA undertakings are generally carried out by international consultancy firms unfamiliar with these countries’ social and climatic contexts. As it is said, EIA undertakings have resulted from technical export from the US and “applying it to planning environments and cultures that are very different” [22]. Even so, these EIAs are state-sponsored undertakings with likely biased results. By conducting semi-structured interviews with megaproject stakeholders, Ninan et al. [20] introduced covert obstacles, including the political push for projects. Categorised as high-risk endeavours, these projects are normally influenced by various actors and have generally failed to deliver planned objectives [20]. In other research, notions of “power” and “influence” were observed in 72% of the papers published on stakeholder analysis of environmental projects [23].

4. Conclusions

Assessment of social, political, and economic aspects of drylands was beyond this paper's scope, and no one can overlook the inevitable impacts of these factors on the environment. Like other dryland countries, Iran has experienced irreversible changes from any aspect to be considered and left a legacy of heavily degraded natural landscapes.

The author argues that understanding of EIA assessment, mandatory project evaluation, and directives were developed in Iran lately or (likely) ignored for several decades. As it is correctly said, the adoption of EIA by developing countries is a procedural formality rather than "a suitable mechanism to avoid environmental and social harm" [22].

The two plausible reasons proposed in response to the questions raised in this paper provide preliminary insights, but more research is needed to evaluate the evidence in detail.

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